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III

OLD BRAZOS FORGE
TXD 048901235
BRENHAM, TEXAS

RCRA FACILITY ASSESSMENT REPORT

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 6
1445 Ross Avenue
Dallas, Texas 75202

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Work Assignment No. R260212

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1.0 INTRODUCTION

PRC Environmental Management, Inc. (PRC) received Work Assignment No. 26, Project No. 39 from the U.S. Environmental Protection Agency (EPA) under Contract No. 68-W9-0041. This work assignment is to provide technical support on a Resource Conservation and Recovery Act (RCRA) Facility Assessment (RFA) of Old Brazos Forge, located in Brenham, Texas.

1.1 PURPOSE OF THE RCRA FACILITY ASSESSMENT

The RFA is designed to identify environmental releases or potential releases from solid waste management units (SWMUs) that may require corrective action. The RFA is the first phase of the corrective action program under the 1984 Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA). Specifically, Sections 3004(u), 3004(v), and 3008(h) grant the EPA authority to initiate corrective action for releases of hazardous wastes and constituents from SWMUs at RCRA-regulated facilities. An RFA generally consists of three steps: (1) preliminary review (PR), (2) visual site inspection (VSI), and (3) sampling visit (SV). A sampling visit is conducted only when available information is insufficient to support a recommendation for an RFI. The RFA at Old Brazos Forge did not include sampling.

The PR and VSI result in the compilation and evaluation of available information on the facility for the following purposes:

- Evaluate existing information on hazardous waste releases or potential releases.
- Identify all SWMUs and potential release pathways.
- Screen from further investigation those SWMUs that do not pose a threat to human health or the environment.
- Determine the need for further action, such as an RFI.

An RFA is required for facilities that manage hazardous wastes. An RFA was conducted at Old Brazos Forge to determine whether there have been, or are likely to be, releases of hazardous wastes or hazardous constituents at Old Brazos Forge that will require further investigation.

1.2 PROCEDURES

The RFA was conducted in accordance with procedures outlined in the EPA's RCRA Facility Assessment Guidance document (October 1986). PRC conducted the PR at the Texas

Water Commission (TWC) in Austin, Texas, on October 31, 1989, and at the EPA Region 6 office in Dallas, Texas, on November 1, 1989.

PRC conducted the VSI on February 8, 1990, at Old Brazos Forge. The VSI provided the additional information needed to make the recommendations presented in this report. Photographs of the facility and its SWMUs taken during the VSI are provided in Appendix B.

The following personnel were present during the VSI:

•	A.V. Carroll	Former Hussmann Corporation Employee
•	Dennis Dubitski	Hussmann Corporation
•	Tony Gardner	PRC EMI
•	Barry Sims	PRC EMI

1.3 REPORT

This report summarizes the information obtained during the PR and VSI, and evaluates the information in terms of the RFA objectives. The facility is described in Section 2.0; its environmental setting is discussed in Section 3.0; the Solid Waste Management Units are identified in Section 4.0; potential human and environmental targets are described in Section 5.0; areas of concern are identified in Section 6.0; and conclusions and recommendations are presented in Section 7.0.

2.0 FACILITY DESCRIPTION

The Old Brazos Forge facility is owned by the Hussmann Corporation. The facility manufactured wire shelving products from 1965 to May 1988. Steel fabrication and electroplating were performed during that period. Old Brazos Forge is located on a 20-acre site approximately 1 mile northwest of the town of Brenham, in Washington County, Texas.

2.1 SITE LOCATION

Old Brazos Forge is located at 30° 11' 02" north latitude and 96° 25' 09" west longitude in Washington County, Texas. The site is bordered on the east by State Highway Loop 36 NW. The site is bordered on the north and south by undeveloped grass and woodlands, and on the west by a residence. Figure 1 is an area location map. General facility data are provided below.

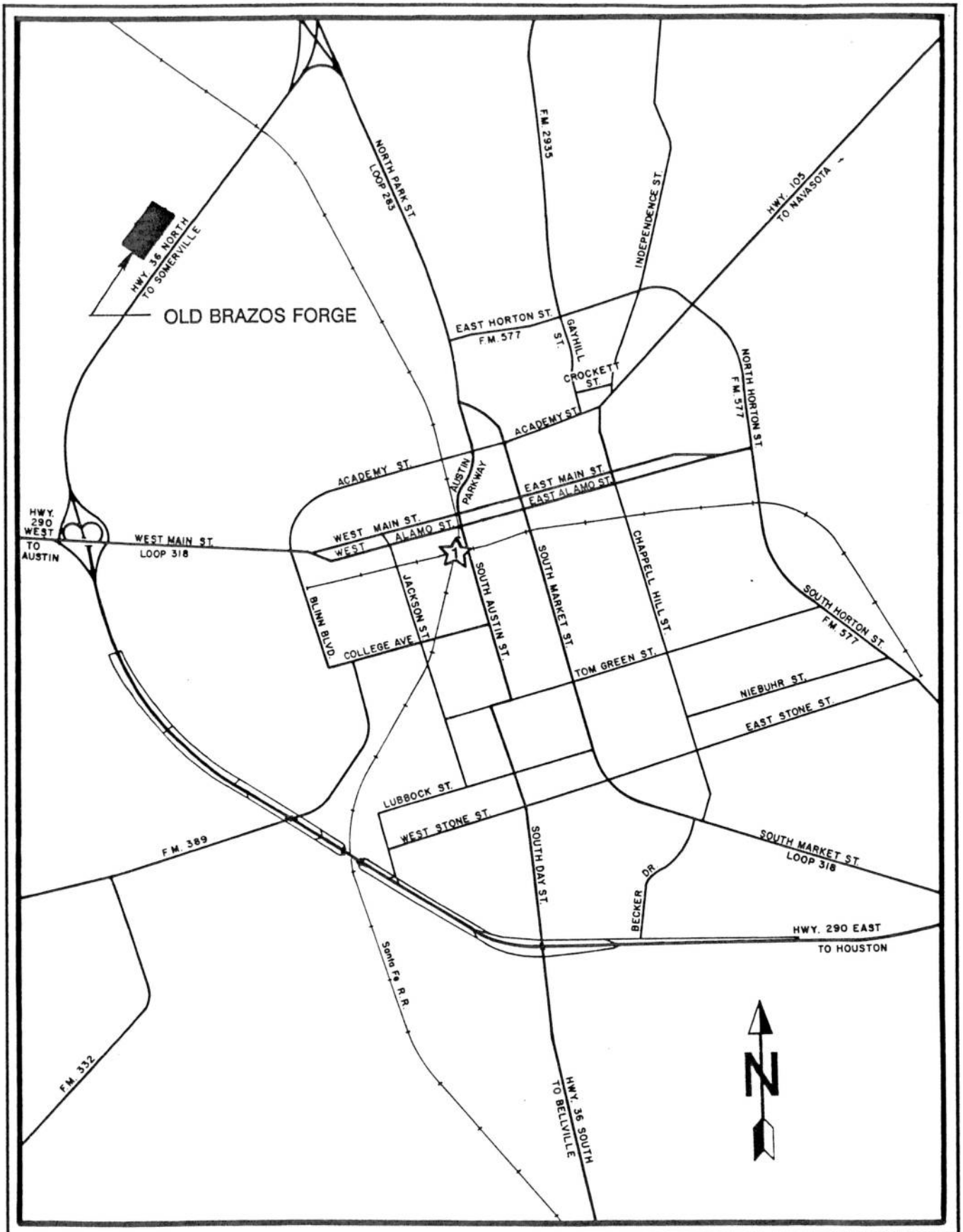
Facility Address:	Old Brazos Forge Loop 36 NW Brenham, Texas 77833
Facility Contact:	Mr. Dennis F. Dubitski, Director Safety and Environmental Affairs Hussmann Corporation 12999 St. Charles Rock Road Bridgeton, MO 63044
Telephone:	(314) 344-0541
EPA I.D. Number:	TXD048901235
TWC Reg. No.	30897
NPDES Permit No.	TX0089486

2.2 FACILITY OPERATIONS AND HAZARDOUS WASTE MANAGEMENT

Old Brazos Forge began operation as a facility for manufacturing wire shelving in 1965. During operation, an electroplating process using metal salts of chromium, copper, nickel, and zinc generated wastewater. Prior to 1982, earthen trenches carried effluent into three unlined surface impoundments. Overflow discharged through another earthen trench into an unnamed tributary of the Little Sandy Creek.

In response to enforcement actions taken by the Texas Department of Water Resources (TDWR), and under interim status, Old Brazos Forge prepared a partial closure plan for only the earthen trenches (Lamar Green Company, 1982). The TDWR approved the partial closure plan, and the trenches were closed in-place in 1982 during the construction of a wastewater treatment facility. Old Brazos Forge prepared a second closure plan for the in-place closure of the three surface impoundments (Lamar Green Company, 1983). The TDWR approved the closure plan, and the surface impoundments were certified as closed on August 22, 1984, by Robert C. Schmidt, P.E. (Texas Registration Number 50465).

After the wastewater treatment system was installed in 1982, the facility ceased discharging into the surface impoundments and began discharging treated effluent into the unnamed tributary of Little Sandy Creek. The discharge was regulated under National Pollution Discharge Elimination System (NPDES) Permit No. TX0089486, first issued on April 5, 1982. Metal-bearing sludge generated by the wastewater treatment system was (1) dewatered with a filter press, (2) accumulated for less than 90 days, and (3) shipped to a commercial Treatment, Storage, and Disposal (TSD) facility for disposal. In November 1984, the facility filed an Affidavit of Exclusion (Appendix A) with the TDWR. The facility ended its manufacturing operations in May 1988.



SITE LOCATION MAP

Source: Washington County Chamber of Commerce

OLD BRAZOS FORGE

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FIGURE 1

2.3 REGULATORY STATUS

The following subsections summarize the regulatory history of Old Brazos Forge and its current status under both the Resource Conservation and Recovery Act (RCRA) and the Clean Water Act (CWA).

2.3.1 Resource Conservation and Recovery Act

Old Brazos Forge submitted a Notification of Hazardous Waste Activity to the EPA on August 8, 1980. On August 15, 1980, Old Brazos Forge submitted an industrial solid waste storage processing disposal facility permit application to the TDWR.

In response to enforcement action taken by the TDWR under the Texas Industrial Solid Waste Management Regulations and the Federal Water Pollution Control Act, Old Brazos Forge began construction of a wastewater treatment system and the closing the surface impoundments and associated conveyance trenches. The proposed location of the treatment plant was on top of earthen trenches formerly used to convey to the surface impoundments, (1) wastewater, from the electroplating operations, (2) storm water run-off from the building roof, and (3) wastewater from floor drains within the facility. The soils within the earthen trenches had elevated concentrations of chromium, copper, nickel, and zinc.

On April 26, 1982, prior to construction of the wastewater treatment plant, which was scheduled to begin in May 1982, Old Brazos Forge submitted an interim status partial closure plan (Lamar Green Company, 1982), to the TDWR. The partial closure plan governed the in-place closure of the earthen trenches. Old Brazos Forge proposed (1) the transfer of a portion of the contaminated soils, excavated prior to the construction of the wastewater treatment plant foundation, to one of the surface impoundments, (2) placement and compaction of clay fill material within the trenches, and (3) construction of the concrete foundation as a hydrologic cap to reduce infiltration of precipitation. The TDWR approved the partial closure plan with the requirement that the trenches be regulated as a landfill, because not all of the contaminated soil was removed.

On October 19, 1983, the TDWR approved a closure plan that had been prepared by Old Brazos Forge for the three surface impoundments. Closure of the three surface impoundments consisted of (1) removal and on-site treatment of the water remaining in the impoundments, (2) placement of hydrated lime to cover all exposed sludge and contaminated soils, (3) backfilling of the impoundments with the surrounding earthen dikes, (4) construction of a 4-foot-thick sandy clay cap, followed by the addition of topsoil, and (5) seeding the area with grass. A May 13,

1983 amendment to the closure plan estimated that 8,300 cubic yards of sludge and contaminated soil remained in the closed surface impoundments. Robert C. Schmidt, P.E., Texas Registration Number 50465, certified that the surface impoundments were closed in accordance with the closure plan on August 22, 1984. The TDWR accepted this certification on March 21, 1985.

Old Brazos Forge submitted to the TDWR a ground-water monitoring plan for which the date of submittal is unknown, as the file copy is undated. However, Old Brazos Forge submitted a revision to the TDWR on September 12, 1985. Eight shallow ground-water monitoring wells were installed, and a ground-water monitoring program consisting of annual sampling for the next 30 years was implemented. Subsequent ground-water sampling showed statistically significant increases in the concentrations of chromium, copper, nickel, and zinc between up-gradient and down-gradient monitoring wells.

A ground-water assessment was performed in 1988 (Reed and Associates, Inc., 1988). The assessment consisted of (1) the collection of ground-water samples from the six on-site monitoring wells, (2) evaluation of past ground-water quality data, (3) statistical evaluation of sampling results, and (4) performance of an aquifer drawdown test in the uppermost aquifer. Samples collected during the ground-water assessment showed elevated concentrations of chromium, copper, nickel, and zinc, compared with the range of background concentrations; however, concentrations did not exceed EPA Drinking Water Standards.

In December 1989, a second-phase ground-water assessment was conducted (Reed and Associates, Inc., 1989). This assessment included: (1) construction of three additional monitoring wells in the perched aquifer, (2) construction of three monitoring wells in the water-table aquifer underlying the perched aquifer; (3) collection of water quality samples from each of the new wells, and (4) collection of surface water quality samples from three locations along Little Sandy Creek. Results indicated that the concentrations of metals in the surface water samples from the Little Sandy Creek, and ground water in both the perched and underlying lower sand unit aquifers did not exceed EPA Drinking Water Standards. The analytical results of the first- and second-phase ground-water assessments are provided in Appendix C.

After the wastewater treatment system began operation, the facility began to accumulate wastewater treatment sludge on-site for less than 90 days. The chromium-, copper-, nickel-, and zinc-bearing sludge was then manifested and transported to a commercial TSD facility for disposal. In November 1984, Old Brazos Forge submitted an Affidavit of Exclusion (Appendix A) to the TDWR, based on both the exemption of the wastewater treatment system and the less-than-90-day storage exclusion. The Affidavit of Exclusion was filed to exempt Old Brazos Forge from submitting a RCRA Part B permit application. On July 31, 1985, the TWC[1] withdrew the

request for the RCRA Part B permit application. From 1985 until the close of operations in 1988, Old Brazos Forge operated as a hazardous waste generator. Neither EPA nor TWC files contain any notices of violations associated with the storage, manifesting, transportation, or disposal of hazardous wastes at Old Brazos Forge.

2.3.2 Clean Water Act

A TDWR field investigation on September 14, 1981 revealed that Old Brazos Forge was discharging untreated electroplating wastewater into an unnamed tributary of Little Sandy Creek without a state or federal permit. The wastewater was first discharged into three hydraulically connected, unlined surface impoundments, then discharged into the unnamed tributary of Little Sandy Creek. TDWR collected and analyzed wastewater effluent samples, and the results showed that the concentrations of chromium, copper, nickel, and zinc were in violation of TDWR standards. Old Brazos Forge responded by installing a wastewater treatment system, and submitting applications to the EPA and the TDWR for a National Pollution Discharge Elimination System (NPDES) permit. On April 5, 1982, the TDWR issued a permit for disposal of wastewater under provisions of Chapter 26 of the Texas Water Code, and the EPA issued the corresponding NPDES Permit No. TX0089486.

A visual inspection by the TDWR on December 6, 1983, identified that Old Brazos Forge was probably in violation of the NPDES permit discharge standards because sludge was observed in the streambed downstream from the outfall. The TDWR collected and analyzed sediment samples from the streambed. Sample results indicated that the concentrations of chromium, copper, nickel, and zinc exceeded background concentration. Remedial action taken by the facility consisted of the excavation of soils (1) from the surface impoundment overflow discharge trench to the creek, and (2) along the creek for a distance of approximately 150 feet. There was no documentation obtained during the PR that stated how or where the excavated sediments were disposed.

On December 12, 1986, the TWC collected and analyzed samples of the sediment below the NPDES outfall for the presence of heavy metals. One background sample was collected upstream of the outfall, and six were collected downstream. The results showed that, downstream from the outfall, the concentration of chromium, copper, nickel, and zinc exceeded background levels (Appendix D).

[1] In 1985 the Texas Water Commission succeeded the Texas Department of Water Resources (TDWR) as the responsible regulatory agency.

3.0 ENVIRONMENTAL SETTING

This section describes the environmental setting of the Old Brazos Forge site. The information provides a basis for evaluating potential impacts on human health and the environment, resulting from existing or potential releases of hazardous materials from SWMUs identified at Old Brazos Forge. The following sections describe the surface water, geology, and hydrology at the site.

3.1 SURFACE WATER

The nearest body of surface water is the unnamed intermittent tributary of Little Sandy Creek, which flows along the northwest portion of Old Brazos Forge. It flows into Little Sandy Creek east of the site. Little Sandy Creek flows into New Year Creek, and then into the Brazos River. The Brazos River Basin is classified for contact and non-contact recreation, high-quality aquatic habitat, and public water supply. Effluent from the wastewater treatment system and storm-water runoff from Old Brazos Forge discharge into the tributary. Surface water features in the vicinity of Old Brazos Forge are shown in Figure 2.

As discussed in Subsection 2.3.1., the second phase ground-water assessment (Reed & Associates, Inc., 1989) included the collection of surface-water quality samples from three locations in Little Sandy Creek. Figure 2 shows the sampling locations. Analytical results indicate that the concentrations of chromium, copper, nickel, and zinc do not exceed EPA Primary Drinking Water Standards (Appendix C).

3.2 GEOLOGY

Old Brazos Forge is located on an outcrop of the Miocene-age Fleming Formation, which consists predominantly of calcareous, silty clay with some sand interbeds. Lithologic data, collected during soil boring and monitoring well construction, show that the uppermost strata at the site consist of calcareous, silty clay and some clayey sand from the surface to a depth of approximately 30 feet. Medium- to coarse-grained sand occurs at the depth interval of approximately 30 to 40 feet, and a sandy, silty clay stratum occurs below the sand unit.

The contact between the Fleming Formation and underlying Oakville Sandstone is located approximately one mile west of Old Brazos Forge. These units dip southeast at a rate of approximately 80 feet per mile; therefore, the top of the Oakville Sandstone at the facility occurs about 80 feet below the surface. The Miocene-age Oakville Sandstone consists of calcareous,

Suggested Action

PRC recommends that an RFI be performed.

Reasons

Documented evidence of ground-water contamination warrants further investigation, which should include verification of the ground-water assessment results and a determination of potential threats to human health and the environment.

4.2 SWMU NO. 2 - WASTEWATER CONVEYANCE TRENCHES

Description

This SWMU consisted of three earthen trenches used to convey (1) cyanide-, chromium-, copper-, and nickel-bearing wastewater from the plating operations, (2) storm-water runoff from the building roof, and (3) wastewater from floor drains in the building to the surface impoundment (Figure 7).

Status

The trenches are inactive. The trenches were closed in-place to comply with an interim status, partial closure plan approved by the TDWR on July 1, 1982.

Waste Type

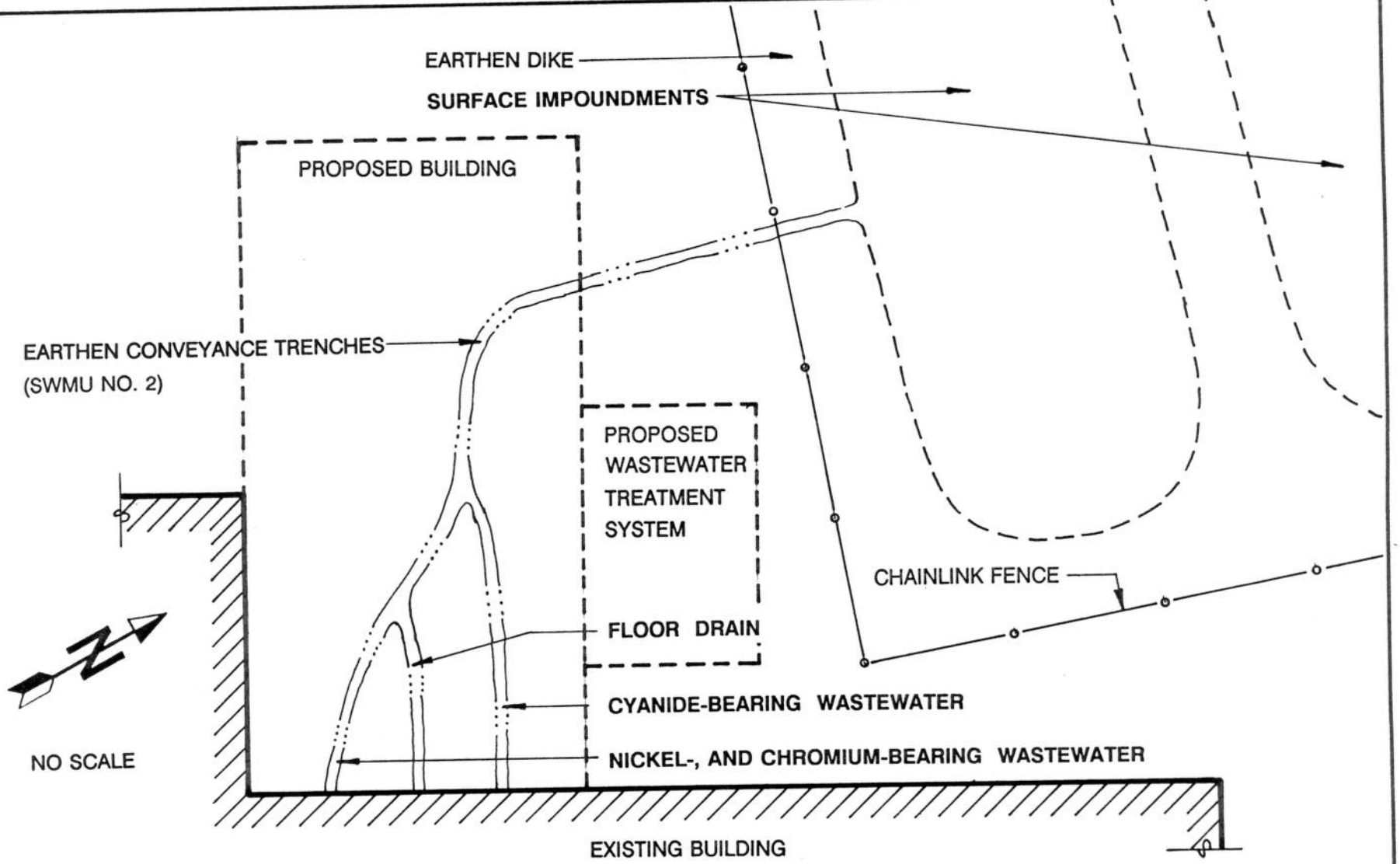
The earthen trenches received chromium-, copper-, nickel-, zinc-, and cyanide-bearing wastewater and sludge, and possibly spent plating solutions.

Waste Management

The earthen trenches collected and conveyed wastewater from the facility to the surface impoundments.

Environmental Releases

Soils in and adjacent to the earthen trenches contained elevated levels of chromium, copper, nickel, and zinc (O' Malley and Clay, Inc., 1983). The concentration and distribution of



EARTHEN WASTEWATER CONVEYANCE TRENCHES SITE PLAN

OLD BRAZOS FORGE

Source: TDWR, Interoffice Memorandum, Nov., 1982

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FIGURE 7

contamination within the trenches is not known. However, the potential for future migration of these metals into ground water or surface water appears to be low, given the fact that the trenches are now located underneath the building. The surface and ground-water quality analyses also indicate that the concentrations of chromium, copper, nickel, and zinc do not exceed EPA Primary Drinking Water Standards.

Remedial Action Taken

The conveyance trenches were closed in-place to comply with an interim status partial closure plan approved by the TDWR. The closure consisted of (1) the transfer of an unknown volume of contaminated soils, excavated during construction of the wastewater system and building expansion, to the surface impoundments, (2) placement and compaction of clay fill material within the trenches, and (3) construction of a concrete foundation for the building expansion that serves as a hydrologic cap. The TDWR approved the partial closure plan on July 1, 1982, recognizing that the trenches would be regulated as a hazardous waste landfill, and subject to all applicable post-closure care requirements of the Texas solid waste regulations.

Suggested Action

PRC recommends an RFI. Old Brazos Forge should provide EPA with the ground-water sampling data to further evaluate the extent of contamination. Upon completion of the review, EPA may recommend additional investigative activities.

Reasons

Although the building foundation isolates the contaminants from human contact and provides a hydrologic cap that may reduce potential subsurface contaminant migration, post-closure ground-water monitoring data will aid in evaluating releases before they present a threat to human health or the environment.

4.3 SWMU NO.3 - SLUDGE STORAGE CONTAINER (PHOTOGRAPHS NO. 5, 6, AND 7)

Description

This SWMU was a 20-cubic-yard steel bin with a plastic liner used to contain the sludge. The steel bin sat on a concrete driveway in the loading dock area on the north side of the main building (Figure 5). The storage bin was furnished by Rollins Environmental Services, Inc., Deerpark, Texas, which transported and disposed of the sludge off-site. During 1988, the final